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*Windbreaks—
A Living Resource*

Cover: Windbreaks protect cropland, crops, buildings, and roads from wind and blowing soil and provide shelter for wildlife and livestock.

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Comments from the SCS Chief:

Windbreaks Are a Wise Investment

A PRUDENT INVESTOR plans for the long term as well as the short term. If we think of our farms and ranches as investments, one of the best long-term decisions many of us can make is to establish windbreaks.

Windbreaks rank high among conservation practices in the dividends they offer. They protect cropland, crops, buildings, roads, and recreation areas from wind and blowing soil, even drifting snow. Windbreaks provide shelter for wildlife and livestock. They are natural fences, giving us privacy at home and an attractive buffer against street noise. Thanks to windbreaks, we also save on our heating and cooling bills.

Windbreaks are a wise investment for your conservation plan. The testing done by SCS plant materials centers has resulted in a tremendous selection of trees, shrubs, and other vegetation to meet many different needs. Various USDA programs—including the Conservation Reserve Program and the Great Plains Conservation Program—as well as State programs can help landowners out with part of the installation cost. Technical advice needed to establish and maintain windbreaks is available also.

Windbreaks make sense in just about every part of the country. In the Great Plains, as in other wind-prone areas, they are the traditional backbone of many conservation systems and will help meet the conservation compliance requirements of the 1985 Farm Bill. Mature windbreaks proved critical in recent droughts, surviving to slow the movement of wind-blown soil and to reduce the wind's drying effect on the soil. Windbreaks also will trap snow, increasing next year's supply of available soil moisture.

Find out what windbreaks can do for you.



Windbreaks

More Trees for North Dakota



Kenneth Lelm, left, SCS soil conservation technician, and Alan Ness, right, SCS district conservationist, Turtle Lake, N. Dak., erect a sign on the farm of Marjean and Roger Boe for their participation in the North Dakota Centennial Tree Program. (Photo courtesy of Lyndon Anderson, *Farm & Ranch Guide Magazine*.)

IN HONOR OF its 100 years of statehood, North Dakota is developing a living legacy of one of its most precious resources—trees. The State plans to plant 100 million trees, a million trees for each year of its statehood from 1889 to 1989.

This massive tree planting—to be carried out over the next 10 years—is the goal of the Centennial Tree Program developed by the North Dakota Centennial Commission and tree planting professionals. It includes community plantings, rural/wildlife plantings, and plantings by individuals.

The North Dakota Association of Soil Conservation Districts is taking the Centennial Tree Program one step further. They've created their own program: the Centennial Tree Farmer Program, proposed by the South McLean Soil Conservation District at the association's 1987 annual meeting and adopted by the other districts. The program encourages landowners to make an extra effort to enlarge, improve, or create new windbreaks of all types.

Local soil conservation districts provide tree stock, access to technical assistance, and machine planting services. Cost-sharing assistance is available through several programs of the U.S. Department of Agriculture, such as the Great Plains Conservation Program administered by the Soil Conservation Service, and the Agricultural Stabilization and Conservation Service's Agricultural Conservation Program and Conservation Reserve Program. The North Dakota Game and Fish Department will supplement cost-sharing programs for wildlife habitat plantings.

To qualify for any of these programs, application for cost sharing must be made by farmers before the trees are planted. Design specifications for windbreak or wildlife plantings must be followed, and plantings must be certified by an SCS conservationist.

Farmers participating in the program receive a personalized sign placed at the entrance to their farmstead from their local conservation district. They also receive a certificate that describes their plantings as a lasting legacy toward reaching the State's goal of planting 100 million trees.

Arlene Deutscher, public affairs specialist, SCS, Bismarck, N. Dak.

Planting Living

Snow Fence Named State's Best

IT WAS WORTH all the effort. When Allen and Bonnie Pizel learned their living snow fence had been pronounced the State's "Best Planting to Date," by Dale Shaw, director of the Colorado Interagency Living Snow Fence Program, they were proud.

"We went through two blizzards last winter, one in January and another in March," Allen Pizel said. "If those trees hadn't been there, County Road HH would have been drifted in. In fact, this is the first year in 5 or 6 years that the road wasn't blocked by snow."

The Pizels planted their trees in the spring of 1985. The planting includes four rows of trees, each extending 700 feet: one row of Rocky Mountain juniper, one of Ponderosa pine, one of Russian-olive, and the last of sandhill plum. The four rows are spaced 30 feet apart. The spacing between individual trees, however, was varied according to the species: the junipers and pines were planted 12 feet apart, the Russian-olives 10 feet apart, and the plums 5 feet apart. The trees were planted on the north side of the road, the first row 100 feet from the road, providing an adequate drop zone for



Through the Colorado Interagency Living Snow Fence Program, more than 115 snow fences—averaging a quarter of a mile each in length—have been planted throughout the State. (Photo by Gene Alexander.)

Snow Fences

snow deposition without snow blowing onto the road.

One reason the Pizels' snow fence has received such acclaim is because of its tremendous growth. When their heights were measured in August 1988, after four growing seasons, the junipers had reached 5 feet, the pines over 4 feet, the Russian-olives 11 feet, and the plum trees 8 feet. It is usual, after planting, for trees to experience planting shock and make very little initial new growth.

"These snowfence trees have done better than the windbreak

trees we planted directly into sod north of the house in 1979," she said. "The newer trees have caught up with the ones that are 8 years old."

The snow fence along County Road HH has been a cooperative effort of the Soil Conservation Service, which planned the design; the Colorado State Forest Service, which provided the trees, rabbit guards, and herbicide; the State Division of Wildlife, which donated fencing material, a project sign, and part of the drip irrigation system; and a horticultural supply firm, which provided additional drip irrigation supplies. Kit

Carson County donated equipment and labor to build water bars on the slope side of the planting for water storage and erosion control. The Burlington Soil Conservation District provided fertilizer tablets and a tree planter, and the three families that took part in the effort along County Road HH provided the site preparation and actual planting of the trees.

Kristi Biesemeier, range conservationist, SCS, Flagler, Colo.

Snow Fences Come Alive

WHAT'S A STATE to do when it receives from 23 to 500 inches of snow a year, which drifts over roads and costs lots of money to remove? Colorado is establishing living snow fences.

Since 1983, through the Colorado Interagency Living Snow Fence Program, the State has been busy replacing less efficient wooden slat fences with rows of trees and shrubs. In May 1988, the State planted its 100th living snow fence. It was planted along busy Interstate 25 between Denver and Colorado Springs. To date, more than 91,000 trees and shrubs have been planted in 115 locations throughout the State. The living snow fences average a quarter mile in length and are usually laid out in three rows.

How did the living snow fence idea get started? Snow barriers of trees were first planted by the railroad companies in the Great Plains States around the turn of the century.

Barring drifting snow from highways is the primary goal of the Colorado program, and a secondary goal is developing wildlife habitat. The living snow fences are designed to include trees and shrubs that provide nesting, loafing, roosting, and feeding areas for game birds. Deer and rabbits use the trees and shrubs for cover. The snow fences—mostly evergreens—also provide considerable winter protection for livestock, especially during calving time.

The Colorado program is receiving wide support: Landowners donate planting sites and in some instances machinery and labor; the U.S. Department of Agriculture's Soil Conservation Service organizes and coordinates planting efforts; the State Forest Service provides seedlings and assistance; and the Division of Wildlife, soil conservation districts, and State and county highway departments donate labor and materials. Private

industry also supports the effort, providing drip irrigation equipment and rodent repellents at no charge. All of these agencies and organizations serve on an advisory committee that receives the support of county commissioners, the State Land Board, and the Governor's Office.

"With everyone cooperating," said Dale Shaw, director of the Colorado program, "many benefits are purchased with the same dollar. Individuals and agencies who never worked together before are finding out what can be done when resources are pooled to solve a common problem."

Future goals of the Colorado Living Snow Fence Program include hundreds of miles of additional road protection and wildlife habitat.

John Plain, public affairs specialist intern, SCS, Denver, Colo.

"Besides the fact that the windbreaks reduce soil erosion, we like the beauty of the trees and the wildlife associated with them," said Loren Heavirland.

Trees Protect Toole County

SINCE 1983, FARMERS in Toole County, Mont., have planted more than 450,000 trees to protect more than 9,000 acres of highly erodible cropland from wind erosion.

The Heavirland family is one farm family convinced of the value of the trees. The Heavirlands started planting field windbreaks in 1972, and they now have 25 miles of trees. They received technical assistance from the U. S. Department of Agriculture's Soil Conservation Service and cost-sharing assistance from the Agricultural Stabilization and Conservation Service (ASCS)

through the Agricultural Conservation Program (ACP) and from SCS's Great Plains Conservation Program (GPCP).

The effects of recent dry, windy years have caused the Heavirlands to set a goal of planting even more trees, enough field windbreaks to protect 100 percent of their cropland from wind erosion.

"Besides the fact that the windbreaks reduce soil erosion, we like the beauty of the trees and the wildlife associated with them," said Loren Heavirland.



Many other Toole County farmers agree. Dean Hellinger, a Devon area farmer, planted 98 miles of trees during the 1960's to protect 4,000 acres of cropland. He cites reduced soil erosion as his primary reason for planting the windbreaks. He received GPCP cost-sharing help.

Hellinger knows firsthand the economic consequences of soil erosion. During the 1930's, parts of his farm were severely damaged by wind erosion, and according to Hellinger, damaged land is more difficult to manage: grain stands are uneven, and the soils tend to crust and bake. He said that, after

all these years, production levels are still less on his damaged land than on the rest of his farm.

Hellinger said that, although 5 percent of his cropland is now taken out of production by field windbreaks, he feels higher yields will more than compensate for the fewer acres in crops.

Troy Wanken, a third generation Shelby area farmer, has received ACP cost-sharing assistance in planting 14,000 trees since 1986. "I'm hopeful the trees will hold snow and increase yields—especial-

ly on the ridgetops with lighter soils," he said.

Another farmer, Bob Pace, has planted 25,000 trees since 1986 with ACP and Conservation Reserve Program cost-sharing funds provided through ASCS. He is looking for several benefits, including a reduction in the need for chemicals for weed control during his summer-fallow year. "I am more concerned about the condition of the land after 50 years of production than the yield right now," Pace said.

David Pratt, district conservationist, SCS, Shelby, Mont.



Geese attracted to a Montana farm by the melting of snow behind a windbreak. Crops can also use the extra water.

Field windbreaks are particularly effective in reducing wind erosion when combined with other practices, such as the conservation tillage on this Montana farm. (Photos by Dean Hellinger.)

"People are beginning to realize they don't have to wait 20 years to begin to get benefits."

Changing Attitudes About Windbreaks

UNTIL A FEW YEARS ago, western Oklahoma landowners had two main objections to planting windbreaks: it took too long for trees to grow enough to give protection from wind erosion and it was hard to establish seedlings because of limited rainfall.

Most landowners didn't want to wait 20 years for the trees to get big enough to do some good. Today that attitude is changing, and many landowners feel like Hugh Holmes of Grant County, Okla., who said, "My cedar trees are only 5 years old, but they really protected my farmstead from blowing snow in December. They also keep the dust from blowing into the farmstead, and I have pheasants using the trees for cover."

The change in attitude seems to have evolved from one popular innovation in farming: drip watering systems.

"Drip watering systems have increased survival rates on trees to over 95 percent and increased the rate of growth. Trees can reach 10 feet in height in about 5 years," said

Norman Smola, SCS State forester in Oklahoma. "A 10-foot-high windbreak provides full protection from wind erosion for about 100 feet downwind and can greatly reduce soil losses for another 100 feet."

Henry Leforce, another Grant County farmer, planted five, three-row windbreaks across a 160-acre cropland field in 1978. "He has been getting protection from wind erosion for several years as well as good winter protection for his cattle," said Bob Smith, SCS district conservationist for the county. "People are beginning to realize they don't have to wait 20 years to begin to get benefits."

Wind erosion is one of the biggest resource problems in western Oklahoma. SCS suggests using windbreaks to combat the problem—particularly on highly erodible land. Windbreaks can also help many farmers satisfy the conservation compliance provision of the Food Security Act of 1985.

F. Dwain Phillips, public affairs specialist, SCS, Stillwater, Okla.

Windbreaks planted on Henry Leforce's farm in Grant County, Okla., in 1978 have been reducing wind erosion and providing habitat for wildlife and protective cover for livestock for several years.



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Windbreaks Aid North Dakota Farmers

THE WIND never stops blowing in North Dakota. To protect his soil and crops from the never ending wind, Carl Lindlauf, who farms 1,970 acres in McHenry County in central North Dakota, has continued a family tradition of planting windbreaks.

The tradition began with the farmstead windbreaks planted by Lindlauf's grandfather. Over the past 15 years, Lindlauf has planted 8 to 10 miles of field windbreaks and plans to plant 12 more miles in the next few years.

Of the 12 miles of windbreaks, 3 miles will be planted on 219 acres of highly erodible land with 50-percent cost sharing provided by the U.S. Department of Agriculture's Agricultural Stabilization and Conservation Service through the Conservation Reserve Program. He will receive 75-percent cost sharing on the other 9 miles as part of his Great Plains Conserva-

tion Program contract administered by the Soil Conservation Service. The adjusted cost for the windbreaks to Lindlauf will be approximately \$1,800.

"Erosion control is the main reason I'm planting the windbreaks," said Lindlauf. "But, I also believe they help conserve soil moisture because they reduce wind velocity, which reduces evaporation. Windbreaks also cause better snow distribution. It doesn't just drift up in a big pile at the other end of the county."

Lindlauf uses a variety of trees and shrubs in his windbreaks to attract and maintain wildlife, especially pheasant and other upland game birds. "I also like to be able to stand here on the hill and just look at the trees," Lindlauf said. "They are beautiful."

The value of windbreaks became especially clear after a duststorm that occurred in May 1988 in the Red River Valley of eastern North Dakota severely damaged more than 600,000 acres of farmland.

During the storm, visibility was zero. Drifts of soil on highways and in drainage channels required a major clean-up effort. However, in one area where there was a large concentration of field windbreaks, there was limited soil movement, the wind velocity was greatly reduced, and the crops survived. These windbreaks had been growing for 20 to 30 years in

a repeating pattern of 300- to 600-foot intervals, creating a series of rectangular fields separated by trees.

Paul Wellman, district conservationist for the Soil Conservation Service in Pembina County where the duststorm was most severe, said the interest in field windbreaks has become overwhelming, especially since the May storm. He said almost every conservation system being planned on highly erodible land in the county includes field windbreaks now.

"Field windbreaks are one of the most popular soil conservation practices in this area," Wellman said. Many farmers in North Dakota who have highly erodible cropland and who wish to comply with the Food Security Act (FSA) of 1985, must grow a high-residue crop such as small grains to protect the soil from wind erosion. However, with the introduction of a windbreak, they can produce a low-residue-high-return crop such as sugar beets or potatoes at least 1 year out of 3 and still be in compliance with FSA.

Bruce Wright, forester, SCS,
Bismarck, N. Dak.